

LETTER TO THE EDITOR

Protein contact dermatitis induced by cabbage with recurrent symptoms after oral intake

Dear Editor,

Protein contact dermatitis (PCD), a particular form of contact dermatitis, was first reported in 1976 by Hjorth and Roed-Petersen.¹ The most frequent symptom is a chronic or recurrent eczema affecting the fingertips or extending to the wrists and arms.² For diagnosing PCD, a skin prick test with fresh or commercial materials is the gold standard, while patch tests are usually negative. Therefore, PCD is considered a type I hypersensitivity reaction.²

A 43-year-old female experienced painful redness, swelling, and cracks involving her fingers (Fig. 1a) 2 months after she started cutting vegetables in a supermarket. Her symptoms persisted despite wearing gloves and applying topical steroids. Patch tests were positive only for nickel, while tests for gloves and other allergens were negative. She had an elevated non-specific immunoglobulin E in the serum at 1174 IU/mL (normal threshold is 320 IU/mL), but the immunoglobulin E test of 33 common allergens using the MAST33 (Hitachi Chemical, Tokyo, Japan) was negative. Immunoglobulin E tests for potatoes, celery, or pumpkin, which she had a chance to contact during her work, were also negative. When she shredded cabbage with her bare hands, swelling and painful lesions appeared on her hands after about 5 h and persisted during the next day. A skin prick test was performed with “prick-to-prick” method using fresh vegetables and the result was positive for cabbage as well as other vegetables belonging to the same species (Japanese mustard spinach and broccoli) after 15 minutes (Fig. 1b). She used gloves strictly and avoided eating raw cabbage. Then, the lesions resolved within 1 week; however, her symptoms appeared again 2 days after she ate white radish and on other days after she ate a Japanese-style savory pancake, okonomiyaki, in which the main ingredient is heat-cooked cabbage, even though she did not cook it by herself. Her symptoms resolved only when she stopped eating heat-cooked cabbage.

In food handlers, cooks, housewives and caterers, the common allergens that cause PCD are fruits, vegetables and spices.² The reduced integrity of the stratum corneum barrier facilitates penetration of the high-molecular-weight protein into the skin.² Many kinds of vegetables have been reported as the allergens of PCD, but to the best of our knowledge, no data related to cabbage have been found.³ In the Japanese literature, 8 cases of PCD caused by wheat, rice, or shrimp had no symptoms after consumption of boiled food.⁴ However, the present patient still showed symptoms after the oral intake of



Figure 1. Clinical findings and results of the skin prick test. (a) The skin at the distal fingertips was dry, cracked, fissured, tender and painful, which caused discomfort and interfered significantly with normal daily activities. (b) The performance of skin prick test. (b1) Saline as negative control (wheal diameter: 1 × 1 mm); (b2) positive control with histamine (4 × 2 mm); (b3), cabbage (4 × 2 mm, 2+), and (b4) Japanese mustard spinach (4 × 3 mm, 2+; upper) and broccoli (4 × 2 mm, 3+; lower).

heat-cooked cabbage. This patient also showed cross-reactivity to broccoli and Japanese mustard spinach. We will try to determine the allergen in cabbage and other similar vegetables. In addition, after the oral intake of cabbage, the symptoms persisted on her hands only, and that may implicate a key role of the local skin memory system in PCD.² Thus, we believe that PCD is a good model for further investigations focusing on the role of a local recall immune response.

CONFLICT OF INTEREST: None declared.

Izumi KISHIMOTO, Naotomo KAMBE, 
Chuyen T. H. NGUYEN, Tomoko MATSUDA,
Yuki NOMURA, Naoko UETSU,
Hiroyuki OKAMOTO

Department of Dermatology, Kansai Medical University, Hirakata, Osaka,
Japan

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